

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	:	Attorney Docket No. 2008_0518
Burrhus LANG et al.	:	Confirmation No. 5973
Serial No. 10/030,519	:	Group Art Unit 3766
Filed June 5, 2002	:	Examiner Mark Bockelman
MEDICAL ELECTRODE	:	Mail Stop: APPEAL BRIEFS-PATENTS

APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the Notice of Appeal filed in the above-referenced application herewith,
Appellants present their brief on appeal.

REAL PARTY IN INTEREST

The real party in interest in this application is Leonard Lang KG of Archenweg 56, A-6010 Innsbruck, Austria.

RELATED APPEALS AND INTERFERENCES

There are no known prior or pending appeals, interferences or judicial proceedings.

STATUS OF CLAIMS

Claims 1-36 stand as canceled.

Claims 37-56 are pending and stand as rejected.

Claims 37-56 are being appealed.

STATUS OF AMENDMENTS

No amendments have been made subsequent to final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

A concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, follows.

Claim 37

The invention is directed to a medical electrode that has a carrier and at least one electrically contactable conductor surface arranged on the carrier. Note page 1 of the English language translation of the International Application, lines 5-8. As discussed from lines 9-22, such electrodes are applied to the skin of a patient for a variety of purposes, including monitoring bioelectrical processes of the body or introducing currents into or taking currents from the body.

In order to improve the apportioning of current, in particular in the case of neutral electrodes, and in order to make such apportioning more uniform, the present invention provides at least one current-equalizing conductor surface arranged on the carrier at a spacing from at least one electrically contactable conductor surface, so as to be electrically separated from the at least one electrically contactable conductor surface and so as to surround the at least one electrically contactable conductor surface on the carrier. Note page 2, lines 5-10 of the specification.

Fig. 4 illustrates an electrode including two electrically contacted conductor surfaces 1a and 1b, each of the electrically contacted conductor surfaces 1a and 1b having a connecting element 3 for an electrode cable, and two uncontacted rings 4 and 5 which do not have any connecting elements 3 for an electrode cable. See page 5, lines 12-17 of the specification.

As discussed beginning at line 20 of page 5 of the specification, the purpose of the uncontacted conductor surfaces, rings 4 and 5, is to achieve the uniform current apportionment. Tests on a patient with neutral electrodes have shown that the use of such uncontacted rings involves a substantially lower level of thermal loading by virtue of improved current density distribution. The uncontacted rings and the contacted conductor surfaces 1a and 1b are arranged

on the carrier, which is designated by reference number 2 and schematically illustrated in Fig. 1. See also lines 25 and 26 of page 5 of the specification.

In the claim, the at least one current-equalizing conductor surface (reference 4 or 5 from Fig. 4) is recited as surrounding the at least one electrically contactable conductor surface on the carrier (the electrically contactable conductor surface being 1a or 1b in Fig. 4). The word surrounding corresponds directly to the language used in the specification. See for example page 2, lines 11-13 and lines 27-31. Further note page 3, lines 15-16.

The claim also describes the at least one current-equalizing conductor surface as being free from connecting elements for connection to circuitry in order to remain electrically uncontacted on the carrier. Note page 4, lines 9-10; page 5, lines 12-24. Further illustrations of the at least one current-equalizing conductor surface that is free from connecting elements for connection to circuitry, in order to remain electrically uncontacted on the carrier, are found in Figs. 6 (reference 4), Fig. 7 (references 4 and 4'), Fig. 8 (references 4 and 4'), Fig. 9 (reference 4), Fig. 10 (references 4 and 5) and Fig. 11 (references 4 and 4a').

Independent Claim 53

Claim 53 is directed to a method of equalizing current in a medical electrode. See page 2 of the specification beginning at line 18, where it is noted that the aim of the uncoated conductor surface is to improve current apportionment, in particular in the case of neutral electrodes which take off current, and to make it more uniform.

Claim 53 provides an initial step of providing a medical electrode. The medical electrode that has a carrier and at least one electrically contactable conductor surface arranged on the carrier. Note page 1 of the English language translation of the International Application, lines 5-8. As discussed from lines 9-22, such electrodes are applied to the skin of a patient for a variety of purposes, including monitoring bioelectrical processes of the body or introducing currents into or taking currents from the body.

In order to improve the apportioning of current, in particular in the case of neutral electrodes, and in order to make such apportioning more uniform, the present invention provides at least one current-equalizing conductor surface arranged on the carrier at a spacing from at least one electrically contactable conductor surface, so as to be electrically separated from the at least one electrically contactable conductor surface and so as to surround the at least one

electrically contactable conductor surface on the carrier. Note page 2, lines 5-10 of the specification.

Fig. 4 illustrates an electrode including two electrically contacted conductor surfaces 1a and 1b and two uncontacted rings 4 and 5 which do not have any connecting elements 3 for an electrode cable. Each of the electrically contacted conductor surfaces 1a and 1b has a connecting element 3 for electrode cable. See page 5, lines 12-17 of the specification.

As discussed beginning at line 20 of page 5 of the specification, the purpose of the uncontacted conductor surfaces is to achieve uniform current apportionment. Tests on a patient with neutral electrodes have shown that the use of such uncontacted rings involves a substantially lower level of thermal loading by virtue of improved current density distribution. The uncontacted rings and the contacted conductor surfaces 1a and 1b are arranged on a carrier, designated by reference number 2 in Fig. 1. See also lines 25 and 26 of page 5 of the specification.

In the claim, the at least one current-equalizing conductor surface (reference 4 or 5 from Fig. 4) is recited as surrounding the at least one electrically contactable conductor surface on the carrier (the electrically contactable conductor surface being 1a or 1b in Fig. 4). The word surrounding corresponds directly to the language used in the specification. See for example page 2, lines 11-13 and lines 27-31. Further note page 3, lines 15-16.

The claim also describes the at least one current-equalizing conductor surface as being free from connecting elements for connection to circuitry in order to remain electrically uncontacted on the carrier. Note page 4, lines 9-10; page 5, lines 12-24.

Circuitry is connected that delivers to or monitors energy from at least one electrically contactable conductor. Note the discussion at lines 8-12 of page 1; lines 23-28 of page 1; lines 18-26 of page 2; lines 22-25 of page 3; lines 24-29 of page 4, discussing a monitoring apparatus being connected; and line 31 on page 4 to line 2 of page 5, discussing energy transmission in general terms.

The uncontacted surface is electrically unconnected to the circuitry, as it is provided with no connecting elements. See lines 11-17 of page 2.

Energy is delivered to or received from the circuitry via the at least one electrically contactable conductor; see again lines 24-30 of page 4, continuing into the paragraph spanning pages 4 and 5 of the specification, for example. A distribution of the current is equalized by the

at least one contacted conductor surface. See again lines 11-17 of page 2, lines 5-10 of page 2 and lines 20-24 of page 5.

Independent Claim 56

Independent claim 56 is directed to a medical system that includes circuitry selected from the group consisting of circuitry that monitors biopotentials and circuitry that provides electrically energy to a patient. See the discussion of the connection of a monitoring apparatus at lines 24-30 of page 4. See also the discussion of energy transmission in the paragraph spanning pages 4 and 5 of the specification. See also lines 5-8 of page 1 of the specification; lines 8-12 of the first page of the specification; and lines 25-28 of the first page of the specification.

The medical system further includes a medical electrode. The medical electrode has a carrier and at least one electrically contactable conductor surface arranged on the carrier. Note page 1 of the English language translation of the International Application, lines 5-8. As discussed from lines 9-22, such electrodes are applied to the skin of a patient for a variety of purposes, including monitoring bioelectrical processes of the body or introducing currents into or taking currents from the body.

In order to improve the apportioning of current, in particular in the case of neutral electrodes, and in order to make such apportioning more uniform, the present invention provides at least one current-equalizing conductor surface arranged on the carrier at a spacing from at least one electrically contactable conductor surface, so as to be electrically separated from the at least one electrically contactable conductor surface and so as to surround the at least one electrically contactable conductor surface on the carrier. Note page 2, lines 5-10 of the specification.

Fig. 4 illustrates an electrode including two electrically contacted conductor surfaces 1a and 1b and two uncontacted rings 4 and 5 which do not have any connecting elements 3 for an electrode cable. Each of the electrically contacted conductor surfaces 1a and 1b has a connecting element 3 for electrode cable. See page 5, lines 12-17 of the specification.

As discussed beginning at line 20 of page 5 of the specification, the purpose of the uncontacted conductor surfaces is to achieve uniform current apportionment. Tests on a patient with neutral electrodes have shown that the use of such uncontacted rings involves a substantially lower level of thermal loading by virtue of improved current density distribution.

The uncontacted rings and the contacted conductor surfaces 1a and 1b are arranged on the carrier, designated by reference number 2 in Fig. 1. See also lines 25 and 26 of page 5 of the specification.

In the claim, the at least one current-equalizing conductor surface (reference 4 or 5 from Fig. 4) is recited as surrounding the at least one electrically contactable conductor surface on the carrier (the electrically contactable conductor surface being 1a or 1b in Fig. 4). The words surrounding corresponds directly to the language used in the specification. See for example page 2, lines 11-13 and lines 27-31. Further note page 3, lines 15-16.

The claim also describes the at least one current-equalizing conductor surface as being free from connecting elements for connection to circuitry in order to remain electrically uncontacted on the carrier. Note page 4, lines 9-10; page 5, lines 12-24. Further illustrations of the at least one current-equalizing conductor surface that is free from connecting elements for connection to circuitry, in order to remain electrically uncontacted on the carrier, are found in Figs. 6 (reference 4), Fig. 7 (references 4 and 4'), Fig. 8 (references 4 and 4'), Fig. 9 (reference 4), Fig. 10 (references 4 and 5) and Fig. 11 (references 4 and 4a').

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 37-52 are indefinite under 35 U.S.C. § 112, second paragraph for use of a negative intended use limitation.

Whether claims 37-52 are anticipated under 35 U.S.C. § 102(b) by Canadian Patent 1,219,642 to Frize et al. (Frize).

Whether claims 37-39, 41 and 52 are anticipated by King, U.S. Patent 4,282,886 (King).

Whether claim 56 is unpatentable over Frize under 35 U.S.C. § 103(a).

Whether claims 53-55 are unpatentable over King under 35 U.S.C. § 103(a).

Whether claims 53-55 are unpatentable over Frize under 35 U.S.C. § 103(a).

ARGUMENT

Claims 37-52 are not Indefinite under 35 U.S.C. § 112, Second Paragraph

At the top of page 2 of the final Office Action dated June 25, 2010, the Examiner states that claims 37-52 use a negative intended use limitation which renders the claim indefinite.

Further, the Examiner states that “how an element is to be used involves future knowledge of the

use of the device by the user which makes the claim indefinite. How a device will not be used makes the claim even more so indefinite since it requires the future knowledge of everyone.” It is respectfully submitted, however, that the Examiner’s rejection of the claims on this basis is incorrect as both a matter of law and fact.

While not specifically identified by the Examiner, it is believed that the limitation to which the Examiner objects is the last limitation of claim 37. This clause states that “said at least one current-equalizing conductor surface is free from connecting elements for connection to circuitry in order to remain electrically uncontacted on said carrier.”

Applicants have gone back and forth in an attempt to provide language acceptable to the Examiner to express the point: with the present invention there is at least one current-equalizing conductor surface free from connecting elements which are uncontacted, the at least one current-equalizing conductor surface being that which surrounds the at least one electrically contactable conductor surface on the carrier. This is clearly described in the above Summary.

The first part of the last paragraph of claim 37 requires the at least one current-equalizing conductor surface to be free from connecting elements. The Examiner characterizes this expression as a negative limitation. However, “the current view of the courts is that there is nothing inherently ambiguous or uncertain about a negative limitation. So long as the boundaries of the patent protection sought are set forth definitely, albeit negatively, the claim complies with the requirements of 35 U.S.C. § 112, second paragraph.” MPEP § 2173.05(i). In order to express this limitation in a manner which the Examiner might find acceptable, Applicants employed language specifically approved in the above section of the MPEP. That is, the “free from” language was considered definite in the case of *In re Wakefield*, 422 F.2d 897, 899, and 904, 164 USPQ 636, 638, 641 (CCPA 1970). See MPEP § 2173.05(i), second paragraph. Accordingly, it is respectfully submitted that the language “free from” as employed with respect to the “connecting elements” recited in the last paragraph of claim 37 is an acceptable and approved expression.

Such an expression does not require future knowledge of the use of the device by a user. A person of skill in the art readily understands whether or not a current-equalizing conductor surface on a carrier of a medical electrode has a connecting element for connection to circuitry. Such connecting elements are known in the art as readily demonstrated by the Frize reference.

Thus one of ordinary skill in the art readily understands the metes and bounds of the claim, i.e. the claim scope from the language provided: if a connecting element of the type that is for connection to circuitry is connected with a current-equalizing conductor surface on a carrier of a medical electrode, then it cannot meet the limitation provided in the last paragraph of claim 37; if at least one current-equalizing conductor surface does not have such a connecting element, then the limitation is met. This is an unambiguous structural recitation readily understood by those of skill in this art, i.e. they would readily understand whether there is a connecting element present or not present.

The Examiner's reference to an intended use limitation is assumed to be a reference to the last clause of the last paragraph of claim 37: "for connection to circuitry in order to remain electrically uncontacted on said carrier." This recitation identifies the type of connecting element and makes the scope even further clear to those of skill in the art. It does not require "the future knowledge of everyone" to be able to determine whether a particular device might infringe claim 37 or not, as those of skill in the art readily understand whether or not a connecting element for connection to circuitry is present with the current-equalizing conductor surface or not. Accordingly, reversal of this rejection of claims 37-52 is respectfully requested.

Claims 37-52 are not Anticipated by Frize

Claim 37

Claim 37 requires at least one current-equalizing conductor surface that is arranged on a carrier at a spacing from at least one electrically contactable conductor surface, the at least one current-equalizing conductor surface being free from connecting elements. There is no such current-equalizing conductor surface that is free from connecting elements in Frize.

The Examiner, beginning at the bottom of page 2 of the final rejection, refers to the Canadian patent to Frize as showing in Figure 3 potential electrode elements 30, 33 and 36 "that extend to a tab 32 with three uncontacted elements. The elements are each capable of being contactable by an electrode or can be considered "free" of a contacting element depending upon the intended use."

Looking at Fig. 3 of Frize, it may be seen that there are three elements 30, 33 and 36 on a backing material 39. These elements each have a respective connector link 31, 35 and 38 to a connector tab 32. Thus Frize has no conductor surfaces free from connecting elements.

The Examiner takes the position that the elements (“Applicants’ circular rings as shown in their drawings”) are capable of being contactable by an electrode. “Thus, the Examiner designates which elements are contactable in terms of intended use in interpreting Applicants’ claims”. The Examiner then proceeds to designate which elements are contactable and states that “the Examiner considers the contactable conductor to be electrode 30 and the uncontacted conductor to either elements 33 and/or 36.” See the top of page 3 of the Office Action.

However, this interpretation by the Examiner is contrary to law and must be reversed.

As described in the specification and reflected in independent claim 37, the point of the invention is that a medical electrode that has at least one electrically contactable conductor surface also has at least one uncontacted current-equalizing conductor surface for the purpose of equalizing the current provided to the contactable conductor surface. It is arranged at a spacing and is electrically separated from the at least one electrically contactable conductor surface. Further, it is free from connecting elements.

In the Canadian patent to Frize, as described beginning at line 5 of page 3, an electrode for connection to an electrosurgical generator comprises a plurality of separate conductive elements that are spaced apart in a surface plane and attached to the non-conductive backing 39. A connector is provided from each one of the conductive elements to a resistor having a resistance value that is proportional to the current flow through the one of the conductive elements to provide for uniform current distribution. As is appreciated from the general description of Frize, as well as the drawings thereof, each conductive surface has a respective connecting element and a corresponding resistor.

The Examiner’s position appears to be that it is permissible for the Examiner to look at drawing Fig. 3 of Frize and to designate either element 33 or element 36 as an uncontacted conductor. This is despite the fact that both elements 33 and 36 clearly do have a connecting element 35, 38. It appears that the Examiner is taking the position that because of “intended use” language provided in the claims, the Examiner is somehow permitted to read the elements 33 or 36 as being uncontacted. However, this is legally insufficient for the basic fact that the claim language is clear in its requirement that the at least one current-equalizing conductor surface be free from connecting elements for connection to circuitry. This is for the purpose of remaining electrically uncontacted on the carrier. The basic fact is that the elements 33 and 36 are free of

Frize are not free from connecting elements for connection to circuitry, and they are not so-free in order that they in fact be connected to circuitry and be electrically contacted on the carrier.

Even if the Examiner takes the position that the entirety of the clause “for connection to circuitry in order to remain electrically uncontacted on said carrier” is intended use, Frize cannot meet the limitation of the claim. Frize still does not have a current-equalizing conductor surface free from connecting elements.

It is submitted that it is impermissible to designate a contact of Frize as being free of the contacting element depending upon the intended use. The actual use for each of the conductor surfaces in Frize is to be connected with a connecting element, as illustrated, through a resistor. The Examiner’s position thus appears to be that the Examiner is free to ignore structural features that Frize clearly provides. However, such an interpretation is improper.

Applicants’ circular rings being capable of being contacted by an electrical energy applicator is irrelevant. The point is that they are free from contacts, which is what is claimed.

Applicants provide an embodiment in Fig. 4, for example, in which there are two contactable conductor surfaces 3 and two uncontacted current-equalizing conductor surfaces 4 and 5 that are free from connecting elements. Are they somehow capable of being contacted by an electrical energy applicator if someone decided to contact them? That is an irrelevant point, because that is not what is being claimed. What is being claimed is that they are free from connecting elements, which the conductor surfaces of Frize are not. There is a reason they are free from connecting elements in the present invention, which is to use these conductor surfaces as current-equalizing conductor surfaces. But Frize specifically wants the connection.

Simply stated, Frize doesn’t have the claimed structure. It is legally insufficient to say that Frize could have the claimed structure if you change the structure of Frize or the meaning of the claim language. The language in fact requires that the uncontacted connector be free from a connecting element. This is not a statement of intended use but a structural requirement.

The differences between the present invention and Frize are emphasized by the recitation of the current-equalizing conductor surfaces being free from connecting elements, while the contactable conductor surface has a connecting element. One of ordinary skill in the art clearly understands what is a connector element in the context of an electrode. The Examiner is not free to ignore structural features or a required absence of a structural feature, particularly when it

directly relates to the purpose of the invention. Accordingly, it is respectfully submitted that claim 37 defines over Frize and that the rejection must be reversed.

Claim 39

Claim 39 requires that the at least one current-equalizing conductor surface extends along the at least one electrically contactable conductor surface. While Frize has conductor surfaces that at least partially surround or extend along other conductor surfaces, it has no uncontacted conductor surfaces that at least partially surround or extend along a contacted conductor surface.

Claim 41

Claim 41 requires that the at least one current-equalizing conductor surface be shaped as a circular ring. There is no conductor surface in Frize that is free from a connecting element shaped as a circular ring.

Claim 42

Claim 42 requires that the at least one current-equalizing conductor surface comprises a conductor surface that extends into an intermediate space between two spaced electrically contactable conductor surfaces that are arranged on the carrier, or into a recess configuration in a conductor surface.

There is nothing from the Frize reference that illustrates a current-equalizing conductor surface as defined by claim 37 extending into an intermediate space between two spaced electrically contactable conductor surfaces or a recess configuration in a conductor surface.

Claim 43

Claim 43 requires that the at least one current-equalizing conductor surface of claim 37 comprise two current-equalizing conductor surfaces that are curved parallel. There are no such current-equalizing conductor surfaces in Frize.

Claim 49

Claim 49 requires that at least two of the electrically separated contactable conductor surfaces comprise two electrically contactable conductor surfaces that are in different radial

positions and that have surface areas and peripheral lengths thereof that are substantially equal. There are no such electrically contactable conductor surfaces having different radial positions over the surface areas and peripheral lengths thereof that are substantially equal found in Frize.

Claims 37-39, 41 and 52 are not Anticipated by King

Claim 37

The patent to King does not anticipate claim 37. The Examiner cites King, at the bottom of page 3 of the final Office Action, as having an electrode 14, which is correct. See for example Figs. 1 and 3 and the description beginning at line 13 of column 2 of King. Electrode 14 is a ring electrode that is surrounded by a ring of adhesive 16, which is protected by a foil cover 16a. The ring electrode 14 appears mounted to what is referred to as a top hat 14a for structural support (see line 41 of column 2) which is mounted in electrode support member 12. In any case, ring 14 does appear to be an electrically contactable conductor surface, and includes a connecting element 20/20a extending to the electrode ring 14.

However, the foil cover 16a, which in use is peeled away from adhesive 16, does not and cannot correspond to the claimed current-equalizing conductor surface. The Examiner characterizes the foil 16a as being conductive in the next to last line of page 3 of the Office Action. However, there is no evidence to support this conclusion by the Examiner contained within the King patent. It would seem as likely, if not more likely, for the foil cover 16a to be a plastic foil, rather than a metal foil. In any case, there is no indication of conductivity, no indication that foil 16 could equalize a current, and thus the limitation is clearly not anticipated by King.

It should be further noted that claim 37 requires the at least one current-equalizing conductor surface to be arranged on the carrier. In King, however, the foil 16a is provided on an adhesive 16, and not on the top hat 14a or the electrode support member 12. Note Fig. 3 and lines 21-26 of column 2 of King. Thus King also does not anticipate this limitation of the claim.

Accordingly, it is clear that King does not anticipate claim 37.

Claim 38

Claim 38 requires that the connecting element for the at least one electrically contactable conductor surface in claim 37 be a tab. While King has conductor surface 14, it does not appear to have a connecting element that is a tab.

The Examiner characterizes 14a as a tab. However, 14a in King is a so-called top hat that is part of a rectangular configuration for structural support, and is not a tab. See column 2, lines 38-43.

Claim 56 is not Unpatentable over Frize

Claim 56 is not anticipated by Frize because Frize does not have at least one current-equalizing conductor surface arranged on the carrier as claimed at a spacing from the at least one electrically contactable conductor surface claimed, where the at least one current-equalizing conductor surface is free from connecting elements for connection to circuitry in order to remain electrically uncontacted on the carrier. Nor is this configuration obvious, because there is no reason from any of the prior art that has been cited by the Examiner to remove any of the connectors required by Frize. Indeed, there is reason not to remove such connectors. Nor could some intermediate configuration of Frize correspond to the claim, because whether or not the electrodes of Frize have been hooked up, the connecting elements are still provided.

Claims 53-55 are not Unpatentable over King

At the middle of page 4 of the Office Action, claims 53-55, which are method claims, are considered obvious from the U.S. patent to King. The Examiner states that to have placed the King electrode against tissue to test the functioning of the device prior to removing the outer conductor for permanent attachment would have been an obvious procedure. However, even if one accepted the proposition made by the Examiner in this rejection, the limitations of method claim 53 are still not met.

The first step of claim 53 is “providing a medical electrode” with a structure the same as that discussed above. Thus King does not meet the limitations of this method step because King does not provide at least one current-equalizing conductor surface that surrounds the electrically contactable conductor surface on the carrier and that is free from contacting elements for a connection to circuitry.

Claim 53 further requires connecting circuitry to deliver or monitor energy to or from the at least one electrically contactable conductor surface, and further requires delivering or receiving an energy transmission between the circuitry and the at least one electrically contactable conductor surface “while leaving the at least one current-equalizing conductor surface on the carrier electrically unconnected to circuitry and equalizing the distribution of the current with the at least one current-equalizing conductor surface on the carrier.” King clearly does not meet this limitation.

The Examiner’s theory is that one of ordinary skill in the art would have tested the King electrode by not removing the foil but still placing the electrode against tissue to test the device prior to permanent detachment. However, there is no evidence of record to indicate that one of ordinary skill in the art would test an electrode of the type according to King in this manner. There is no evidence of record, thus, to support the Examiner’s position that this is a legitimate or known way to test the electrode. There is thus nothing from which to conclude that this adaptation of King would have been obvious.

Claim 53 further requires that the energy transmission between the circuitry and the at least one electrically contactable conductor surface be “while . . . equalizing the distribution of the current with the at least one current-equalizing conductor surface on the carrier.” As the foil 16a of King is removed prior to use, it would not be present during transmission of energy between electrode 14 and any circuitry, and thus would not be capable of carrying out any current equalization. There is no indication that even if the foil 16a were left, and the electrode applied to tissue, for example for the purpose of testing the electrode in accordance with the Examiner’s theory, that any current equalization would be carried out, because there is no indication that the foil 16a is a conductor, or even if it were a conductor, it is not clear that any current equalization could be carried out given its position etc.

In any case, it is clear that King bears no relation to the present invention and has no discussion whatsoever of any such current equalization.

Claim 55

Claim 55, a method claim dependent from claim 53, further requires that the step of providing of claim 53 provides the medical electrode so that the at least one current-equalizing conductor surface surrounds a plurality of electrically contactable conductor surfaces. However,

the King patent has a single electrode 14, and thus does not have a plurality of electrically contactable conductor surfaces. Nor is there any explanation as to why this would be obvious from King. As such, the Examiner's rejection fails to state a *prima facie* case of unpatentability.

Claims 53-55 are not Unpatentable over Frize

Claim 53

In rejecting claim 53, the method claim, the Examiner states that "to have used the Canadian patent in a bipolar configuration or a monopolar configuration wherein only the central electrode is used would have been obvious." However, there is no evidence of record to support the Examiner's position, and thus the Examiner's rejection fails to state a *prima facie* case of unpatentability of claim 53 by Frize.

The Examiner's position appears to be that it would be obvious to employ the medical electrode of Frize in a manner such that only the central electrode has energy delivered or received thereto or therefrom, and then one of the outer electrodes would correspond to "leaving the at least one current-equalizing conductor surface on the carrier electrically unconnected to circuitry and equalizing the distribution of the current with the at least one current-equalizing conductor surface on the carrier." However, such position is against the teachings of the Canadian patent.

In Frize, a plurality of separate conductive elements are provided. There is a connector for each one of the conductive elements to a resistor having a resistance value that is proportional to the current flow through one of the conductive elements in order to provide uniform current distribution. Note the discussion at lines 5-13 on page 3 of Frize. The subsequent paragraph on page 3 of Frize provides slight variations for the different embodiments, but still indicates that each electrode has a connector and a respective resistor. Note also the discussion on page 5 of Frize, in particular, lines 31-34, indicating that the resistance value of the resistors is determined so as to have uniform temperature distribution by having uniform current density per skin surface contact area. Noting the subsequent discussion, the surface area of each element is determined and the portion of the total current for each element calculated. This determines the resistance value.

Thus it is clear that Frize contemplates using each of the electrodes, and adjust the relative current between the electrodes to maintain uniform current density so as to have uniform

temperature distribution for each electrode. This arrangement of Frize does not contemplate any arrangement in which there is no current provided to one of the elements. This would be against the manner of operation of Frize. Frize does not recognize the possibility that a completely unconnected conductor surface be provided for equalizing the current. Such is against the explicit teachings of Frize, which are that current equalization is by providing current to each of the elements with respective resistors.

Thus it is seen that the Examiner's conclusion that using Frize in a bipolar configuration with a monopolar configuration, with only the central electrode being used, is not obvious, and is against the explicit teachings of Frize.

In the anticipation rejection of claims 37-52 by Frize, the Examiner, in the last two sentences of that section, on page 3 of the final Office Action, referenced the method step as being inherent. However, it is noted that claim 53 is not rejected by the Examiner as being anticipated, and it is assumed that this statement has been made by the Examiner in error. In the same part, the Examiner stated that the method does not require the uncontacted metal surface to remain unconnected to the electrical stimulator. However, this is not true. It is clearly stated in the last paragraph of claim 53 that the delivery or reception of energy transmission between the circuitry and the at least one electrically contactable conductor surface is carrier out while leaving the at least one current-equalizing conductor surface on the carrier electrically unconnected to circuitry. In that same section, the Examiner states that "if Applicant were to amend the method claims to state that the uncontacted conductor is not connected electrically to the electrical stimulator during electrical stimulation the Examiner would look favorably upon the claims." As noted, this is in fact what claim 53 says. Accordingly, the Examiner's statements on page 3 of the final Office Action are inconsistent with the Examiner's rejection of claims 53-55 as being obvious on page 4 of the Office Action.

It is in any case respectfully submitted that claim 53 is not anticipated and not rendered obvious by Frize for the reasons as discussed.

CONCLUSION

For the reasons as set forth above, it is respectfully submitted that all of claims 37-56 are definite, not anticipated and not obvious from Frize or King. Reversal of the rejections made by the Examiner is accordingly requested.

Respectfully submitted,

Burrhus LANG et al.

/Nils E. Pedersen/

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APPENDIX - Claims on Appeal

37. A medical electrode, comprising:

a carrier;

at least one electrically contactable conductor surface arranged on said carrier, said at least one electrically contactable conductor surface having a connecting element for connection to circuitry;

at least one current-equalizing conductor surface that is arranged on said carrier (a) at a spacing from said at least one electrically contactable conductor surface, (b) so as to be electrically separated from said at least one electrically contactable conductor surface and (c) so as to surround said at least one electrically contactable conductor surface on said carrier;

wherein said at least one current-equalizing conductor surface is free from connecting elements for connection to circuitry in order to remain electrically uncontacted on said carrier.

38. The medical electrode as set forth in claim 37 wherein said connecting element is a tab.

39. The medical electrode as set forth in claim 37, wherein said at least one current-equalizing conductor surface extends along said at least one electrically contactable conductor surface.

40. The medical electrode as set forth in claim 37, wherein said at least one current-equalizing conductor surface surrounds a plurality of current-equalizing conductor surfaces on said carrier.

41. The medical electrode as set forth in claim 37, wherein said at least one current-equalizing conductor surface is shaped as a circular ring.

42. The medical electrode as set forth in claim 37, wherein said at least one current-equalizing conductor surface comprises a conductor surface that extends into an intermediate space between two spaced electrically contactable conductor surfaces arranged on said carrier or into a recess configuration in a conductor surface.

43. The medical electrode as set forth in claim 37, wherein said at least one current-equalizing conductor surface comprises two current-equalizing conductor surfaces that are curved parallel.

44. The medical electrode of claim 37, wherein said at least one electrically contactable conductor surface comprises at least two electrically separated contactable conductor surfaces arranged on said carrier, wherein one of said electrically contactable conductor surfaces at least partially surrounds another of said conductor surfaces.

45. The medical electrode as set forth in claim 44, wherein an inner one of said at least two electrically separated contactable conductor surfaces is surrounded by an outer conductor surface of said at least two electrically separated contactable conductor surfaces, said outer conductor surface extending around said inner said conductor surface with a constant gap spacing relative to an outer edge thereof.

46. The medical electrode as set forth in claim 44, wherein an inner conductor surface of said at least two electrically separated contactable conductor surfaces is of a substantially round circular configuration and is surrounded by an outer conductor surface of said at least two electrically separated contactable conductor surfaces, said outer conductor surface being in the form of a circular ring.

47. The medical electrode as set forth in claim 44, wherein an outer conductor surface of said at least two electrically separated contactable conductor surfaces surrounds an inner conductor surface of said at least two electrically separated contactable conductor surfaces over an angular range of more than 270°.

48. The medical electrode as set forth in claim 44, wherein at least one inner conductor surface of said at least two electrically separated contactable conductor surfaces and an outer conductor surface of said at least two electrically separated contactable conductor surfaces surrounding said inner conductor surface have respective projecting contacting elements for

electrode cables, wherein said connecting elements are arranged laterally, one beside the other, and parallel to each other.

49. The medical electrode of claim 44, wherein said at least two electrically separated contactable conductor surfaces comprises two electrically contactable conductor surfaces that are in different radial positions and that have surface areas and peripheral lengths thereof that are substantially equal.

50. The medical electrode of claim 44, wherein said at least two electrically separated contactable conductor surfaces comprise at least one conductor surface of a hook-shaped configuration, said hook-shaped configuration surrounding an other of said at least two electrically separated contactable conductor surfaces.

51. The medical electrode of claim 44, wherein each of said at least two electrically separated contactable conductor surfaces comprise hook-shaped projections that are interleaved one into the other.

52. The medical electrode as set forth in claim 37, wherein an outside contour of said at least one electrically contactable conductor surface is round.

53. A method of equalizing the current in a medical electrode, comprising the steps of: providing a medical electrode comprising a carrier, at least one electrically contactable conductor surface arranged on the carrier, the at least one electrically contactable conductor surface having a connecting element, at least one current-equalizing connector surface that is arranged on the carrier (a) at a spacing from the at least one electrically contactable conductor surface, (b) so as to be electrically separated from the at least one electrically contactable conductor surface and (c) so as to surround the at least one electrically contactable conductor surface on the carrier, wherein the at least one current-equalizing conductor surface is free from contacting elements for connection to circuitry in order to remain electrically uncontacted on the carrier;

connecting circuitry that delivers to or monitors energy from the at least one electrically contactable conductor surface;

delivering or receiving an energy transmission from the circuitry to the at least one electrically contactable conductor surface while leaving the at least one current-equalizing conductor surface on the carrier electrically unconnected to circuitry and equalizing the distribution of the current with the at least one current-equalizing conductor surface on the carrier.

54. The method of according to claim 53, further comprising providing the medical electrode so that the at least one current-equalizing conductor surface extends along the at least one electrically contactable conductor surface.

55. The method according to claim 53, further comprising providing the medical electrode so that the at least one current-equalizing conductor surface surrounds a plurality of electrically contactable conductor surfaces.

56. A medical system comprising:
circuitry selected from the group consisting of circuitry that monitors biopotentials and circuitry that provides electrical energy to a patient; and
a medical electrode comprising a carrier, at least one electrically contactable conductor surface arranged on the carrier, the at least one electrically contactable conductor surface having a connecting element for connection to circuitry, at least one current-equalizing conductor surface that is arranged on the carrier (a) at a spacing from the at least one electrically contactable conductor surface, (b) so as to be electrically separated from the at least one electrically contactable conductor surface and (c) so as to surround the at least one electrically contactable conductor surface on the carrier, wherein the at least one current-equalizing conductor surface is free from connecting elements for connection to circuitry in order to remain electrically uncontacted on the carrier, and wherein the at least one current-equalizing conductor surface is spaced from the at least one electrically contactable conductor surface so as to provide improved current density distribution.

APPENDIX - Evidence

No evidence.

APPENDIX - Related Proceedings

No related Proceedings.